NATURAL CAPITAL ACCOUNTING FOR BETTER POLICY

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Wealth Accounting and the Valuation of Ecosystem Services

Potential Policy Applications of Ecosystem Accounting in the European Union

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Summary

The EU has started work to develop EU-level pilot ecosystem accounts by 2020. The recently-launched KIP-INCA project[1] aims to design and implement an integrated accounting system for ecosystems and their services in the EU, to serve a range of information needs. The aim is to pilot a comprehensive set of accounts and to test how they can support a number of specific policies in the EU.

This short paper outlines a number of potential policy applications for ecosystem accounting, with particular reference to EU policies.

Natural capital accounts can in principle provide added value in a range of policy contexts. This includes supporting macro-economic policies, as it would also facilitate the development of macro-level physical and/or economic indicators that are consistent with the National Accounts and thus could complement GDP. These indicators could make more explicit the contribution of natural capital to economic development alongside financial and social capital.

There are also many potential advantages of using natural capital accounts in sectoral policies. For example, in forest policies accounts can provide tangible and systematic information reflecting the true value of forest ecosystem services beyond timber production alone. For agricultural, regional and marine policies, accounts could inform further policy development in a more systematic manner, help better target measures and investments, or for example help better quantify the contribution of marine ecosystems to ocean management and governance and the blue economy.

In the EU policy context, applications include support for a range of policies such as the EU Birds and Habitats Directives, the Water Framework Directive and the Floods Directive, the Marine Strategic Framework Directive, the Common Agricultural Policy, The Marine Strategic Framework Directive, the development of a trans-European network of green infrastructure (TEN-G), or monitoring the impact of nature-based solutions. In time, natural capital accounting could help support the Environmental Reporting fitness check. For businesses, NCA could provide a concrete framework for their performance reporting, to help measure business opportunities and dependencies on natural resources, in physical and monetary terms.

The development and practical testing of NCA in policy contexts can also provide useful input to the further development of international guidelines such as UN SEEA EEA. This in turn can provide a consistent basis for measuring progress at international level, and in the longer term provide opportunities for synergies in reporting such as on the 2030 sustainable development agenda.

This initial outline should help lay the basis for prioritising the future prototyping and testing of selected natural capital accounts in the KIP-INCA project.

1. Introduction

Natural capital accounting is of strategic importance for ensuring smart, sustainable and inclusive growth. It aims to better integrate natural capital into socio-economic decision making as national accounts currently underpin many socioeconomic decisions but do not fully take the contribution of ecosystems into account. It is widely accepted that a broad range of economic activities are dependent upon natural capital but natural assets are not infinite and are under threat of depletion and degradation as a consequence of economic activity and other drivers of change.

[1] Knowledge Innovation Project for an Integrated system for Natural Capital and ecosystem services Accounting: http://ec.europa.eu/environment/nature/capital_accounting/index_en.htm

Ecosystem services are the benefits that nature provides to society. Ecosystems services include food provision, air and water filtration, pollination, climate regulation and protection against natural disasters such as flooding and many others. Many of these essential services are not visible because they are not priced on markets and hence not accounted for in current socio-economic decisions. The incorporation of ecosystems into standard accounting frameworks is essential to mainstream nature and biodiversity in decision making, and to promote more resource efficient and sustainable choices about our future.

In the context of EU environmental policies, the EU 7th Environment Action Programme (7thEAP)[2] and the EU Biodiversity Strategy[3] include objectives to develop natural capital accounting (NCA) with a focus on ecosystems and their services.

Ecosystem accounting complements the international system of national accounts (SNA). It builds on the System of Environmental-Economic Accounting – Central Framework (SEEA CF) which provides methodological guidelines for setting up accounts for environmental assets as individual resources such as timber resources or water resources. The UN SEEA EEA (Experimental Ecosystem Accounting)[4] goes beyond the central framework to give guidance on setting up accounts that reflect the role of ecosystems and their services. It is still in an experimental phase but may become a UN standard at a later stage.

At EU level, important results have been achieved under the initiative on Mapping and Assessment of Ecosystems and Services (MAES)[5], as well as on categorising ecosystem services through the Common International Classification of Ecosystem Services (CICES). The European Environment Agency (EEA) has piloted land and water accounts, whilst the JRC has gained relevant experience and important knowledge on modelling ecosystem services. The Commission's research division has funded relevant research and innovation projects that KIP-INCA can build on, such as the OPERAs, OpenNESS[6] projects or the Horizon 2020 action ESMERALDA[7].

The recently launched KIP-INCA project aims to design and implement an integrated accounting system for ecosystems and their services in the EU by connecting relevant existing projects and data. The foundation of the system is a common data platform of geo-referenced information on ecosystems and their services. KIP-INCA builds on the first phase of MAES work, which aims to map and assess ecosystems and their services in the EU, and supports the second phase of MAES which aims to value ecosystem services and integrate them into accounting and reporting systems by 2020.

Within EU Member States, progress is also being made on NCA. For example, the Netherlands produced a comprehensive pilot study on ecosystem accounting for the Limburg province, and is planning to extend the approach in 2017 and 2018 to the whole country. The UK developed pilot thematic ecosystem accounts, and broad monetary valuation estimates at national level. Other Member States have also started work on NCA.

KIP-INCA aims to establish an accounting system at the EU level, primarily using EU-wide data sources, to support Member States in developing accounts at national level. Larger scale data at national, regional or local level could be linked to this EU layer for more detailed analysis and Member States would be able to link their systems into the central EU system.

Significant work needs to be done in order to develop comprehensive EU natural capital accounts and in particular to test and evaluate the development and use of such accounts in various policy

[2] http://ec.europa.eu/environment/action-programme/
[3] http://ec.europa.eu/environment/nature/biodiversity/strategy/index_en.htm
[4] http://unstats.un.org/UNSD/envaccounting/eea_project/default.asp
[5] http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/index_en.htm
[6] http://operas-project.eu; http://www.openness-project.eu/
[7] http://esmeralda-project.eu/

application areas. The remainder of this paper addresses this issue by outlining some of the potential policy areas of application of natural capital accounting and examining these in further detail in particular in the EU policy context. This is based on what, in principle, a system to be developed in KIP INCA could provide. To develop this work further, greater interaction with specific policy areas will be needed to help ensure that NCA approaches can be co-developed, adapted and used in a number of policy areas in the longer term.

2. Macro-economic policies and indicators at EU level

Accounting can make the contribution of natural capital to economic development explicit alongside produced or manufactured capital and human capital, as well as making clear links to social advancement, employment, and national wealth. In this way NCA provides important input to macro decision-making at regional, national or EU level. Policies and examples of how NCA can contribute include:

Input to macroeconomic policies such as on the green economy, growth and jobs, annual growth surveys, and others:

- Highlight the economic values of natural capital (stock and flows) such as the monetary values of the economic goods and services produced in a specific year or in a specific sector, alongside other economic information.
- Enable the identification of opportunities and trade-offs at between key economic, social and environmental priorities, at a number of levels.
- Evaluate investment and policy options in a way that better reflects true costs to society and directly addresses externalities, when including accounts of exchange as well as welfare values.
- Provide concrete information to contribute to EU policies such as the Greening of the European Semester and Europe 2020 and its potential follow-up.

Box 1: What are macro-indicators and what exists for natural capital?

Macro-indicators provide aggregated information that is periodically released, most often at a national, EU or international level. A common example of a macro-indicator from the field of economics is Gross Domestic Product (GDP) that presents total national economic output. Other examples include inflation, employment and population.

A macro-indicator for natural capital would inform decision makers by providing an aggregated assessment of the 'state of nature' (in physical and/or monetary terms) to be used in comparison alongside other socio-economic indicators.

Macro-indicators for natural capital have yet to be fully developed and used in a widespread way. Some national-level macro-indicators for ecosystem performance have however been developed. For example, Scotland has developed the Natural Capital Asset Index (NCAI)[8] to monitor changes in natural capital and better inform decision making. Launched in 2011, the NCAI monitors the quality and quantity of terrestrial habitats, according to their potential to deliver ecosystem services now and into the future. Similar approaches exist in the Norwegian Nature Index[9]. The UK produces national-level monetary values of ecosystems.

[8] Scottish Government, 2015. Natural Capital Asset Index. Webpage, available from: http://www.gov.scot/Topics/Environment/Countryside/Landusestrategy/Monitoring/Indicator5

[9] NINA, 2016. The Norwegian Nature Index. Available from: http://www.nina.no/english/Environmental-monitoring/The-Norwegian-Nature-Index

Development of macro-indicators alongside GDP:

- Accounts provide a solid and systematic basis on which to develop macro-indicators of natural capital either in physical or monetary terms. At EU level, macro-indicators could be based on aggregates of national accounts, ensuring consistency, reliability and comparability.
- This can lay the foundations for the development of new macro-indicators that can inform decision-making alongside, or in combination with, GDP or other macro indicators.

3. Sectoral policies:

NCA can contribute to the better understanding, articulation, and accounting of the range of services that ecosystems provide (provisioning, regulating and cultural). These services stand alongside those typically accounted for, such as the provision of timber or food, and need to be explicitly taken into account.

Some benefits cut across several sectoral policies due to the nature of the ecosystem service, or have co-benefits from one policy area to another (e.g. peri-urban forests might, in addition to providing air and water purification services, also contribute to mitigation and adaptation). Natural Capital Accounting can help identify these synergies, as well as potential trade-offs. Another aspect cutting across sectors is the distribution of costs and benefits of ecosystem services, and the challenges and opportunities of designing payment for ecosystem services schemes. NCA could demonstrate potential new income sources for land owners (for example in the forest sector).

Finally, NCA can contribute to the development of consistent and streamlined forms of reporting across a range of policies and at different stages of the policy cycle: planning and development, monitoring and review, and at a range of different spatial scales, including at regional, national or at EU level.

Environmental policies:

- Explicitly account for the range of ecosystem services and demonstrate in monetary terms the benefits of investing in nature, biodiversity, water and air quality and the sustainable management of resources.
- Provide a common reference basis to help assess progress towards targets related to ecosystem restoration, such as Target 2 of the EU 2020 Biodiversity Strategy to restore 15% of degraded ecosystems (which translates Aichi biodiversity target 15 of the CBD's strategic plan for biodiversity 2011-2020).
- In the EU context NCA can in particular be relevant to the 7th EAP, the EU Biodiversity Strategy and the Birds and Habitats Directive, the Water Framework Directive, The Marine Strategic Framework Directive, the Soil Thematic Strategy, air quality policy, the circular economy.

Box 2: Developing ecosystem accounts for protected areas in England and Scotland

A joint study from the Department for Environment, Food and Rural Affairs (UK) and the Scottish Government (2015[10]) covered ecosystem accounts for protected areas in England and Scotland. The study had main aims to both test ecosystem accounting methodologies and inform resource management decisions within protected areas, with implications for policy.

Ecosystem accounting for protected areas

Three interrelated accounts were created: asset (comprising extent and condition), physical flow and monetary accounts. Accounts were split into 6 broad ecosystem types (woodland; enclosed farmland; semi-natural grassland; open waters, wetlands and floodplains; mountains, moorlands and heaths; coastal margins) within each protected area. Asset, physical flow and monetary flow accounts were created for all and then totaled. Where time-series data was held for indicators, changes were shown over time.

Policy implications for protected areas

Through informing resource management within protected areas, the ecosystem accounts can have implications for related policy. It was recognised that the authorities responsible for protected areas may know that the ecosystem they manage is valuable, but ecosystem accounts can help improve the communication of wider benefits in economic terms to other parties. Accordingly, the study identified possible policy implications for ecosystem accounts of protected areas including:

- Promoting **understanding and awareness among stakeholders** of the value provided by an area, including management authorities and the wider public;
- Creating **public support** for an ecosystem and its services;
- **Influencing legislative decisions or securing funding**, for example through targeting habitat enhancements to increase flows of ecosystem services;
- Improving the evidence base for **decision-making in the protected areas themselves** – including finding appropriate balances for competing priorities;
- Identifying **opportunities to enhance the ecosystem functionality** of different spaces within an area to maximise the delivery of all ecosystem services.
- Exploring **innovative mechanisms for revenue generation** – for example payments for ecosystem services, biodiversity offsetting, user fees or helping the narrative to promote visitor donations;

Relevance for EU policy

With existing reporting requirements within the EU for protected areas such as Natura 2000, data held for protected areas has the potential to be of a higher quality than other areas. Accordingly, protected areas could be a thematic focus for further analysis, experimental accounting or even staggered implementation. Further consideration is required before any such conclusions are made.

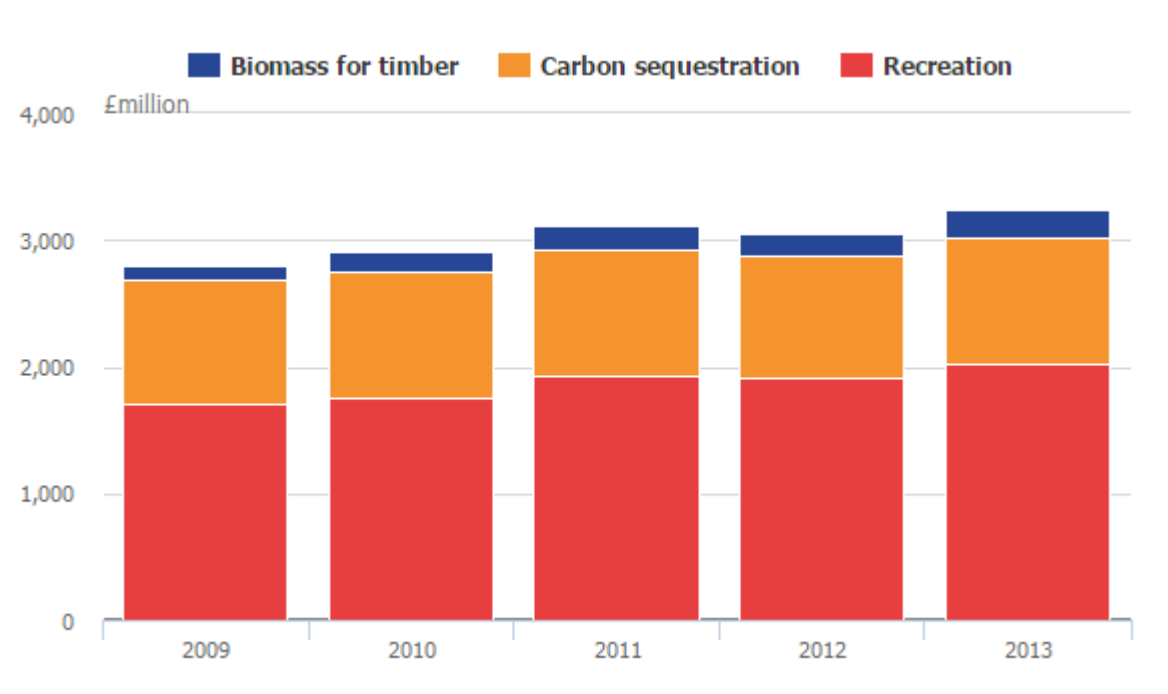
[10] White, C., Dunscombe, R., Dvarskas, A., Eves, C., Finisdore, J., Kieboom, E., Maclean, I., Obst, C., Rowcroft, P. & Silcock, P. (2015), '*Developing ecosystem accounts for protected areas in England and Scotland: Main Report*', Department for Food, Environment & Rural Affairs/The Scottish Government. Available at: http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=19271

Forest management:

- Tangible and systematic information reflecting the true value of forest ecosystem services beyond wood production alone such as: carbon sequestration, water filtration, soil retention, flood avoidance, tourism and leisure and air purification. For example, UK estimates from national forest accounts and associated services indicated that the value of a tree is worth fifteen times its value in timber (see inset box). Similar work carried out in Germany, Spain and by EU-funded research projects indicate similar orders of magnitude.
- Provide systematic input into forest-related policy making, such as the EU Forest Strategy, and into forest land use planning and management decisions.
- Demonstration of potential new income sources through 'Payment for Ecosystem Services' schemes for land owners. These would also involve less dependence on timber market volatility, since the value would be spread across a number of forest services, rather than solely timber.

Box 3: The Value of a Tree: ecosystem services in UK woodland

The UK Office for National Statistics (ONS, 2015[11]) studied the values of UK woodland ecosystems. The study considered three ecosystem services (timber production, carbon sequestration and recreation), calculating monetary flows for them. The results are presented in the graph below.



Notes: prices are in 2013 constant prices

Initial estimates from the monetary services account indicate that the value of timber removed is only a small part of the total value of ecosystem services provided by UK woodlands. The first published results show that in 2009 to 2013 the value of a tree was roughly 15 times that of its timber value (with values ranging from 24 times to 14 times), based on only three ecosystem services. Work is ongoing to firm up these figures.

[11]Office for National Statistics, 2015. Statistical Bulletin: UK Environmental Accounts 2015: http://www.ons.gov.uk/economy/environmentalaccounts/bulletins/ukenvironmentalaccounts/2015-07-09/pdf

Agricultural and Regional policies:

- Provide information in a systematic manner for future policy reviews; such as the Common Agricultural Policy in the EU.
- Numerical illustrations of the benefits of investing in more sustainable forms of farming, connecting landscapes and increasing biodiversity, or of green infrastructure approaches to regional development;
- Provide a sound basis for specific analyses at regional or more local scales, and provide authorities with a wide range of environmentally-favourable options to choose from;
- Help better target investment in projects or measures by including a wider range of values related to ecosystems;

Marine Policies:

- Natural Capital Accounting of marine ecosystems can help to quantify the contributions of marine ecosystems to blue growth in a systematic manner. This could include a range of marine ecosystem services including: provisioning services, such as fish provision or the development of medical products; regulating services such as coastal resilience and protection, carbon sequestration and oxygen production; and cultural services such as leisure and tourism activities. In particular, the valuation of these services, where possible, can be useful in understanding relative contributions of ecosystem services to the blue economy.
- Help in demonstrating opportunities and trade-offs in marine socio-economic decision-making, for example trade-offs with other main marine economic areas (mineral extraction, transport, manufacturing and tourism) as well as trade-offs and opportunities with regard to job creation.
- Accounts of condition or capacity can help indicate levels of sustainable use of marine ecosystems, such as the context of the EU Common Fisheries policy.
- Contribute to develop a systematic approach to developing and representing information about marine assets and the state of the oceans, such as the context of the EU initiative on Ocean Governance.

Box 4: NCA: contributions to Blue Economy

Estimates of UK Natural Capital Accounts[12] show that the ecosystem service of marine carbon sequestration is dominated by the "North Sea Carbon Pump" which sequesters around 2 million tonnes of carbon annually (around 7mt CO2e for marine systems compared to 12.5mt CO2e for woodland). This indicates the relatively high importance of marine systems in carbon sequestration compared to land-based forest sources. Furthermore, based on UK accounts, estimates of the annual value of marine carbon sequestration is £490m, in addition to recreational values of £400m.

[12] Office for National Statistics, 2015. Natural Capital Accounting 2020 Roadmap: Interim review and forward look. Available online: http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/guide-method/user-guidance/natural-capital/related-publications/nc-accounting-roadmap-2020.pdf

Urban and land use planning and Environmental Impact Assessment:

- Provide a concrete basis for evaluating land-use planning decisions. For example:
    - Planning plantation woodland areas nearer to urban areas because of air and water purification services and leisure and health benefits.
    - Planning the creation of wetlands in suitable areas, thus increasing water quality for human consumption;
    - Informing trade-offs in urban planning in areas with high value ecosystem services and high density populations, etc.

Climate Change Policies:

- Numerical values of contribution to mitigation ecosystem services, such as carbon absorption due to oceans, peat lands, and forests, and contributions to valuations of nature-based adaptation strategies. For example, it has been estimated that the annual UK accounting value of marine carbon sequestration is £490m.

- Costs, benefits and investment opportunities at local, regional or national level of nature-based solutions for climate adaptation strategies, such as nature-based coastal or flood protection schemes (for example, the restoration of wetlands and flood plain instead of resorting to more costly high-tech solutions). To include demonstrating financial implications for insurance companies and public budgets.

Health and well-being policies:

- Provide the basis for estimating the benefits of nature and ecosystems to human health at macro level, whilst having potential implications for health care policies and their review. For example, assessing the contributions to premature death reductions and health care costs by improving air quality and introducing more green spaces in urban areas.

Flood risk management:

- Present and quantify the contributions of a number of ecosystems services to flood risk management, and using accounts to advise on flood risk status and identify when action may be required. See box 6 as an example of the contribution of forest other services to mitigating flooding.

- Land use change can have impacts on flood risk. NCA provides a framework to monitor land use and the ecosystem's ability to perform services over time and to flag areas for potential concern. For example in England[13] or Scotland[14], planning systems exist to prevent any developments that would increase the probability of flooding. NCA could provide evidence to adhere to such planning systems.

- Provide methods to monitor and enhance understanding of the possible trade-offs between flood risk management and other ecosystem services. For example, in wetlands the low water

[13] Department for Communities and Local Government, 2012. National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2

[14] Scottsh Government, 2014. *Scottish Planning Policy*. Available at: http://www.gov.scot/Publications/2014/06/5823/downloads#res453827

levels that provide flood storage potential comes at a trade-off to CO2 emission reductions, the preservation of archaeological features and other factors.

Box 5: NCA and flood risk management

The European Environment Agency (2015)[15] considered the role of forests in helping to manage flood risk. Through retaining excess rainwater and lessening, or even preventing, extreme run-offs forests provide ecosystem services that can reduce the impacts of floods. The study presents findings from 65,000 catchments across Europe. In comparison with water basins with forest cover of 10%, total water retention is 25% and 50% higher in water basins where the forest cover is more than 30% and 70%, respectively. It is clear that the extent and density of forest cover would form part of NCA information that would inform flood risk management.

The study also found that the ability of a forest ecosystem to retain water depends on characteristics including: tree composition, tree density, age of forest, length of vegetation growing season and number of layers of vegetation cover. This suggests NCA systems also containing data on key characteristics of any forest would provide additional information to inform flood risk management.

Studies have found (for example, Acreman et al. 2011) that ecosystem services do not work in isolation and that services will not only support each other but also conflict with each other and flood risk management services are no different. Such research suggests that NCA can also provide important holistic information of other contributing services that together can better inform flood risk management strategies.

Research and innovation policies:

- Provision of tools to assess the impacts of research and innovation policies and actions in environmental and economic terms. For instance, in the EU context: Horizon 2020, Nature-Based Solutions and/or Sustainable Cities actions

4. Business and business related policies

Corporate NCA can provide a concrete basis for business reporting by explicitly mapping out the impacts and/or dependencies on natural resources and placing a monetary value on them. It gives companies clarity on how much they depend on nature to generate revenue and provides a common metric to embed sustainability in business decision-making. Greater transparency would be introduced, alongside accountability in the way natural resources are exploited.

NCA also contributes to better management and reduction of risks. It further informs investors about risks and opportunities of their placements directly or indirectly related to natural resources. Reporting, disclosure and transparency on corporate impacts and dependencies on nature are central to enhancing corporate environmental responsibility. For some companies, increasing risks related to environmental change (climate change, loss of natural capital) means that impacts and dependencies on nature are increasingly regarded as strategic risks. Finance departments recognise the disclosure of natural capital as related risks has become key for companies' investors relations. This creates a strong imperative for assessment, reporting and disclosure of these impacts and dependencies, and

[15] European Environment Agency, 2015. Water retention potential of Europe's forests. Available at: http://www.eea.europa.eu/publications/water-retention-potential-of-forests

greater action to reduce risks related to impacts and dependencies. The TEEB reports[16] give a lot of background on potential benefits. Ongoing work from the EU Business and Biodiversity platform and the CBD global platform also provide some useful input. In particular, the recently launched Natural Capital Protocol[17] is a key mile stone. It provides a framework designed to help generate trusted, credible, and actionable information for business managers to inform decisions. The Protocol aims to support better decisions by including how a company interacts with nature, or more specifically natural capital.

In the longer term, NCA also means that business accounting can be compatible with national accounts so they can feed into each other. Specific examples include:

Business Accounting and Reporting:

- Provide a consistent basis and reference for business accounting and reporting on nature and environmental related assets and investments. This in turn can transform business strategies and plans, contribute to the better management of risks, as well as highlighting investment opportunities by directly seeing costs/values related to nature.
- In the context of the EU Disclosure of Non-Financial Reporting and Accounting Directives, NCA can facilitate business reporting, in a way that is consistent with national accounting and reporting.
- Further informs investors about risks and opportunities.
- At international level, a number of initiatives such as the "Friends of Paragraph 47" following Rio+20 and the Global Reporting Initiative have been put into place, with potential for NCA work to contribute to these.

5. International policies

Finally, at international level, the UN development of accounting standards such as the UN SEEA EEA, could contribute to a globally consistent approach to account for ecosystems and their value and for reporting at international level such as for the Sustainable Development Goals (SDGs).

Contribution to UN international standards:

Piloting and testing of NCA in a number of policies areas, in countries and at EU level, can contribute to the further development of international standards such as UN SEEA EEA both at conceptual and practical levels. There are also likely to be contributions to implementation of NCA in developing and middle income countries, such as through projects supported by the EU, with the World Bank and the UN.

International UN Agenda 2030 for Sustainable Development:

Providing a consistent basis for measuring progress to achieve the goals and targets, and contribute to a reduction in parallel reporting. Some natural capital indicators developed could, in the longer term, become input to macro-indicators for measuring progress at an international level.

[16] TEEB reports are available from the '*Natural Capital Accounting & Valuation of Ecosystem Services*' Section of the TEEB website: http://www.teebweb.org/areas-of-work/advancing-natural-capital-accounting/

[17] More info on the Natural Capital Protocol: http://naturalcapitalcoalition.org/protocol/

Interactions with IPBES:

- KIP-INCA could play a role and contribute to international efforts on the valuation and accounting of ecosystem services, including the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)[18]. IPBES also adopted a Summary for Policy-makers of the methodological assessment of scenarios and models of biodiversity and ecosystem services, which stresses the importance to engage policy-makers and stakeholders at an early stage and to cooperate with IPCC on the integration of respective models.
- In relation to marine, the adoption of the UN *World Ocean Assessment* and the upcoming IPBES global assessment on biodiversity and ecosystem services due in 2019 are significant opportunities to develop connections with accounting work. These will cover coastal and marine biodiversity, ecosystem structure and functioning.

Trade:

- Provide gross numerical estimates of the value of loss/gain of ecosystems and nature-based services in guiding bilateral and multilateral trade agreements.

Development:

- Supporting the adoption of NCA in developing countries will enhance their capacity for sustainable decision making processes and help in guiding foreign and internal investments. It can therefore help to increase the effectiveness of development and cooperation policies and ODA contributions.

6. Conclusions

The KIP-INCA project aims to design and implement an integrated accounting system for ecosystems and their services in the EU. The aim is to develop a first set of EU ecosystem accounts by 2020, based on a robust data architecture. There are a number of potential applications in the context of specific EU-level policies that need to be trialed and tested. The potential policy applications outlined in this paper are based on what in principle such an integrated system could provide. As with the development of many tools and information systems the involvement of end-users in specific policy areas is essential to ensure that initial objectives are fulfilled and this is an integral part of the project aims. This initial mapping of policy areas should lay the basis for prioritising the prototyping and, testing a first set of accounts in a number of specific policy contexts in the project. This should support the further development of natural capital accounting in a number of specific policy areas in the years to come.

Acknowledgements

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[18] http://www.ipbes.net/plenary/ipbes-4#working